

Waterpower on the D&H Gravity Railroad

By S. Robert Powell, Ph.D.

Waterpower was used on the inclined planes of the D&H Gravity Railroad in three areas: The light track from Honesdale to Waymart (Planes Nos. 14-17); Planes Nos. 1 and 28 in Carbondale; and Plane No. 21 in Archbald. Both overshot and undershot waterwheels were used on those planes.

When the five inclined planes on the light track from Honesdale to Waymart were opened in 1843, four of them (Nos. 13, 15, 16, 17) had stationary steam engines at the heads of the planes and one of them (No.14) had a water wheel at the foot of the plane. James Archbald's original plan was to have the engines on all five of these planes powered by water wheels, but water rights were either too expensive (Plane No. 13) or could not be obtained (Nos. 15, 16, 17).

James Archbald continued to advocate for waterwheels on Planes 13, 15, 16, and 17, and by 1848, three more of the planes (15, 16, and 17) were powered by waterwheels. A waterwheel was never installed on Plane No. 13 because water rights on that plane, said the D&H, were prohibitively expensive. In the period 1848-1868, the water wheels on Planes 14, 15, 16, and 17 (there were two waterwheels at the foot of Plane No. 17: an upper wheel and a lower wheel) were replaced, one by one, with stationary steam engines. The last of these planes to have its water wheel replaced with a stationary steam engine (built by the Dickson Works in Scranton and operated by Silas Hoyle as Head Engineer and Walter Bryant, Assistant) was No. 14, and that took place in 1868. (The source for our knowledge about the motive power on the planes on the light track from Honesdale to Waymart in the early years of those planes is the February 1847 letter of James Archbald to D&H President John Wurts; also an article in the *Carbondale Advance* of February 8, 1868).

Where did the water come from to power these planes? D&H feeder ponds (e.g., White Oak Pond) and streams flowing down from high-lands to low-lands (e.g., the Van Tuyl brook), among many other feeder ponds and brooks near the D&H Gravity Railroad between Waymart and Honesdale. In recent years, most of those feeder ponds, which provided most of the water to power waterwheels at grist mills and saw mills for hundreds of years and which were built by knowledgeable farmers and lumbermen who knew how to build a dam that would last forever, have, regrettably, been drained, and the foundations of the dams blown up by imperfectly educated, selfish, or nefarious urban dwellers who have moved “to the country”. The water from most of those feeder ponds and from small brooks originating on the Moosic Mountain (e.g., the Van Tuyl Brook) flowed into Stanton Pond (later known as Lake Lodore), and from there into the Van Auken Creek, which merges at Prompton with the West Branch of the Lackawaxen River (water from the Prompton Dam), which flows into Honesdale. After passing through Honesdale that same water powered the D&H canal locks from Honesdale to Hawley to the Lackawaxen River to the Delaware River.

In addition to the waterwheels on the light track between Honesdale and Waymart, there were also waterwheels on Planes No. 1 and 28 in downtown Carbondale, and on Plane No. 21 in Archbald.

Planes Nos. 1 and 28 in downtown Carbondale: The question of waterwheels and waterpower on the Gravity Railroad in downtown Carbondale was raised initially in 1902 when, following the

close of the Gravity Railroad and the removal, by the D&H bridge builders, of the "highworks" (Level No. 28 between the head of Plane No. 28 and the foot of Plane No. 1), workers discovered, as they were removing the abutments which supported those highworks and formed a wall for the embankment of culm, a giant waterwheel, made of oak and pine, that had been buried on the site where the D&H coal pockets at the foot of Salem Avenue would at that time be erected.

The discovery of this buried water wheel resulted in eight articles in Carbondale newspapers about the buried water wheel. (The complete texts of all of those articles are in the Gritman collection in the archives of the Carbondale Historical Society.) As a result of those eight articles, many "street-corner experts" came forward with various explanations about the buried water wheel. At the same time, fortunately, and authentic expert, William Johnson, Sr., who began working for the D&H in 1844 and who helped erect the buried waterwheel in question, came forward (*Carbondale Leader*, February 8, 1902, "A BUILDER SPEAKS ABOUT THE WHEELS...") We have read those eight articles, and here is what we have learned:

Waterwheel on Plane No. 1: When the Gravity Railroad opened in 1829, there was a large upright stationary steam engine at the head of Plane No. 1. In 1845 that upright engine was replaced by a pair of horizontal engines and a fifty-foot water wheel, which was operated by Eulis Campbell. This wheel was used only in the spring and fall of the year when there was an abundant supply of water available to power the wheel. This water was taken from the former Durfee saw mill pond on Canaan Street.

When the water wheel at the head of Plane No. 1 was no longer used, part of that wheel was used to make a book case that was owned by J. J. Alexander, in 1902. About the bookcase, J. J. Alexander reported: "It is made of good heavy oak and I think a great deal of it now. When Charles Wurts was going to leave town, I thought perhaps he might not want to take the case along, it was so heavy. That was about 1866, I had quite a number of books on hand and I asked Gus Wurts to go to his uncle and see if he couldn't get the bookcase. He succeeded in doing so for \$25, which I gladly gave, and the bookcase has been in my possession since." (That book case is now owned by the Mitchell Hose Company, Carbondale.)

Waterwheels on Plane No. 28: "Old Plane No. 28 (1845/46-1853): When the Gravity Railroad opened in 1829, Plane No. 28 did not exist. It was established in 1845/1846, and was powered by a waterwheel with water from the Carbondale Canal. The water for the Carbondale Canal came from two sources: the Lackawanna River and the Fall Brook. The raceway from the Lackawanna River went under the Van Bergen building, Dundaff Street, and then into the Carbondale Canal. The raceway from the Fall Brook ran from a dam just below the Fallbrook Falls and flowed west of present-day Fallbrook Street and then through Carbondale's West Side before it descended to the valley floor and entered, ultimately, the Carbondale Canal. Once under the D&H steam-line tracks, the Carbondale Canal flowed, generally, north-south through downtown Carbondale. In so doing it passed twice under the loaded track of the Gravity Railroad, twice under the D&H steam line tracks, and once under Eighth Avenue, before re-entering the Lackawanna River, in three different locations, in South Carbondale. Old Plane No. 28 served up to 1853, when New Plane No. 28 was built.

“New Plane No. 28 (1853-1859): There were three waterwheels here: one in the period 1846-1853, and two (an overshot wheel, fifteen feet in diameter and ten feet abreast, and a second wheel, slightly smaller and geared to the other wheel) in the period 1853-1859. It was near “New Plane No. 28” that the coal pockets were later built, and where the buried waterwheel and wheelpit were found in 1902.

These water-powered planes on “old” and “new” Plane No 28 were used to transport coal to the foot of Plane No. 1 from (1) the newly opened mines in the Carbondale area (the Powderly mine, beginning in 1845; the Fall Brook mines, beginning in 1846), and (2) the mines in Archbald, the coal from which was now being shipped to Carbondale over the newly-established level from the top of the hill at Archbald to Plane No. 28 area in Carbondale.

Waterwheel on Plane No. 21: The third area of the Gravity Railroad where water power was used was in downtown Archbald, on Plane No. 21.

Plane No. 21, also known as C Plane, was the first of the south-bound planes between Archbald and Olyphant. When this plane was installed in 1859, the motive power on the plane was a waterwheel that was powered by a canal running from White Oak Run parallel to the Lackawanna River. In an article on the Gravity Railroad in Archbald that was published in the *Carbondale News* of January 10, 2001 (p. 7) we read: "The waterwheel at C Plane was powered by a canal which connected White Oak Creek to the Lackawanna River at a point where the river bends at the base of C Bush [Plane No. 21]."

In 1865, this waterwheel at the foot of Plane No. 21 was replaced with a stationary steam engine at the head of the plane. At that time, the Canal was filled with earth, stone, and cinders. Later in the nineteenth century, tracks of the New York, Ontario and Western Railway were laid on the former D&H Canal basin in downtown Archbald.

Over the years, various persons with an interest in the D&H Gravity Railroad have made incorrect statements about the *terminus post quem* (beginning date) and the *terminus ante quem* (the closing date) of the use of water power on the D&H Gravity Railroad. The final word on the question of the final date is given in brief notice that was published in the *Carbondale Advance* of Saturday, February 8, 1868, p. 3, as follows: “The Del. & Hud. Canal Co. have just put a stationary steam engine in at Plane No. 14, on their railroad, in place of the old water power. The engine was built at the Dickson Works, Scranton, and has been placed in charge of Silas Hoyle as Head Engineer and Walter Bryant, Assistant. The company now work the cars on all their planes by steam power.—*Herald*” (*Carbondale Advance*, Saturday, February 8, 1868, p. 3.)

Summary statement on the question of waterwheels on D&H Gravity Railroad: In the period 1845-1868, Planes 1, 14, 15, 16, 17, 21, and 28, at various periods, as we have described above, were powered by waterwheels.

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